Report Date: 30 Apr 2012

Summary Report for Individual Task
551-88L-2045
Maintain an Air System
Status: Approved

Condition: Aboard a vessel, at sea, at anchor or moored alongside a pier, day or night, under all sea and weather conditions, wearing appropriate PPE, (i.e. hearing protection, Nitrile gloves, eye protection, etc.) with no injuries and/or damage to equipment.

Standard: The Soldier will correctly perform before, during, after, weekly, monthly, quarterly/periodic and annual maintenance of the air compressors and air system, while referencing the appropriate technical manuals pertaining to the air compressor and air system.

Special Condition: None

Special Standards: None

Special Equipment:

Safety Level: Medium

MOPP:

Task Statements

Cue: None

DANGER

None

WARNING

None

CAUTION

None

Remarks: None

Notes: None

WARNING

Compressed air systems are under high pressure. Bleed compressed air from system prior to performing any maintenance. Do not direct compressed air against skin or clothing. Particles blown by compressed air are hazardous to eyes and escaping air volume can damage hearing. Wear Personal Protective Equipment (PPE). Failure to comply will result in serious injury.

1. Perform maintenance before each compressor start.

a. Check air compressor(s) oil level.

(1) Check that the oil level is between the HIGH and LOW marks on the dipstick, (refer to Figure 551-88L-2045_01).

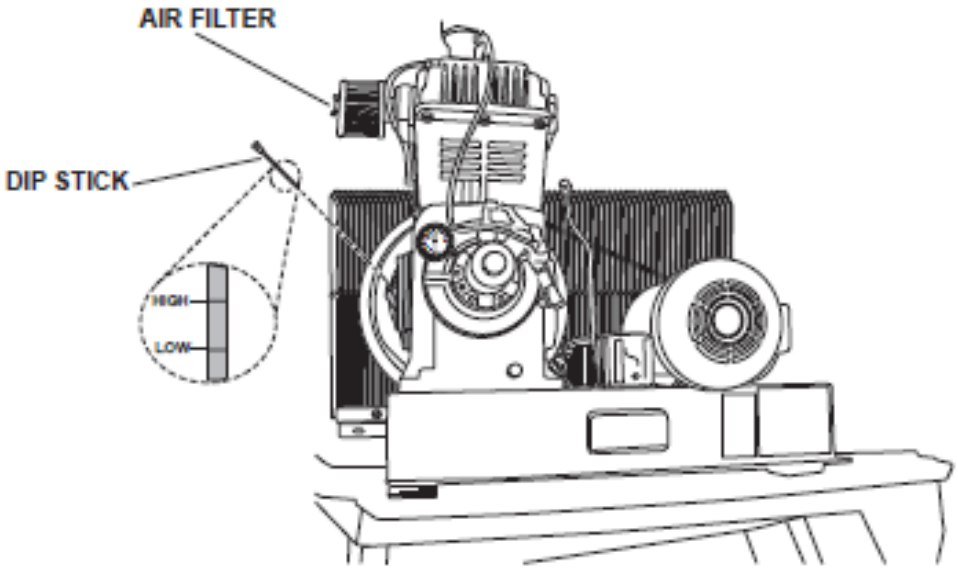

Figure 551-88L-2045_01
Oil Dip Stick

(2) Add oil as necessary.

b. Check the air compressor(s).

(1) Perform an overall visual inspection, ensuring that all hardware and safety guards are in place and tight.

(2) Check for visible signs of oil leakage.

(3) Check air filter condition.

c. Drain the air receivers.

(1) Drain condensed water from the starting air and ships service air receivers by slightly opening the drain valve and allowing air and water to drain.

(2) Discontinue draining when water stops being discharged.

d. Drain the water separators.

(1) Drain trapped water from the water separators by opening the drain valve.

(2) Close the drain valve when water stops being discharged.

(3) (LCU) If excessive moisture is present adjust separator and prefilter solenoid valves, in accordance with Paragraph 6.b.2. of this document.

2. Check air system during operation.

a. Check the air compressor(s).

(1) Check for any unusual noise or vibration.

(2) Check compressor oil pressure when hot, (refer to Figure 551-88L-2045_02).

(a) (LT) Pressure should read 22 to 25 PSI on the oil pressure gauge.

(b) (LCU/LSV) Pressure should read 18 to 20 PSI on the oil pressure gauge.

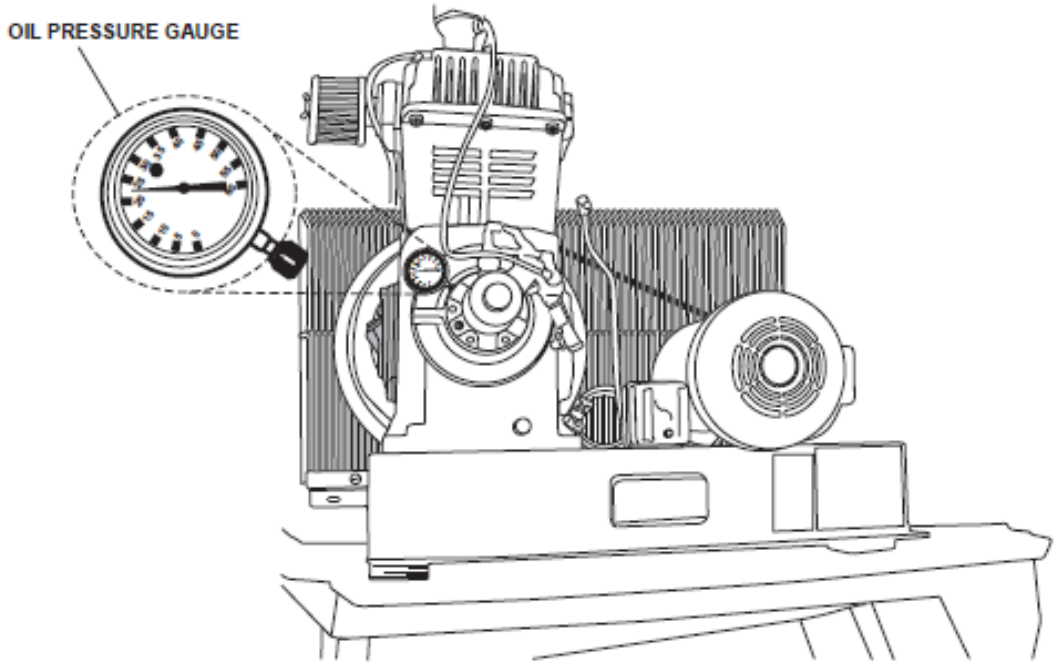

Figure 551-88L-2045_02
Oil Pressure Gauge

b. Check the starting air receiver pressure.

(1) (LSV) Starting air receiver pressure gauge should read 250 PSI.

(2) (LT) Starting air receiver pressure gauge should read 220-250 PSI.

(3) (LCU) Starting air receiver pressure gauge should read 200 PSI.

c. Check that the ships service air receiver pressure gauge reads 150 psi.

d. Check the piping system.

(1) Check the compressed air piping system for leaks.

(2) Check the drop legs and traps for moisture and sediment accumulation.

3. Check air system after compressors have been shut down.

a. Check the air compressor(s).

(1) Perform an overall visual inspection, ensuring that all hardware and safety guards are in place and tight.

(2) Check for visible signs of oil leakage.

b. Check the piping system for visible signs of leakage.

4. Perform weekly PMS.

a. Manually operate the pressure relief valves to be certain they are working on: (refer to Figure 551-88L-2045_03).

(1) Both air compressors.

(2) Both starting air receivers.

(3) Ships service air receiver.

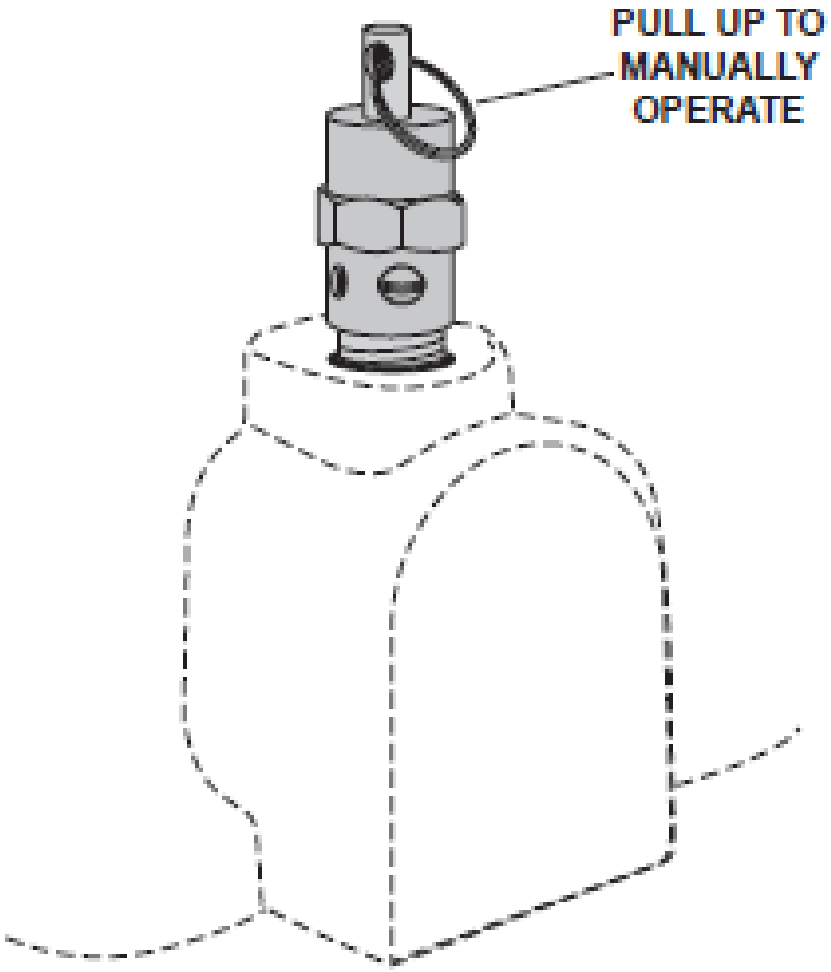

Figure 551-88L-2045_03
Pressure Relief Valve

b. Check the air dryers for:

(1) Leaks.

(2) Loose connections.

(3) Damage.

WARNING

Lock out and tag out Air Compressor circuit breaker before cleaning. Death or serious injury could result from servicing an energized compressor.

c. Service the air compressors.

Note: Ensure that the air compressors are returned to the desired readiness state following cleaning.

(1) Clean the cooling surfaces of the intercooler, and compressor using compressed air and a wire brush as necessary, (refer to Figure 551-88L-2045_04).

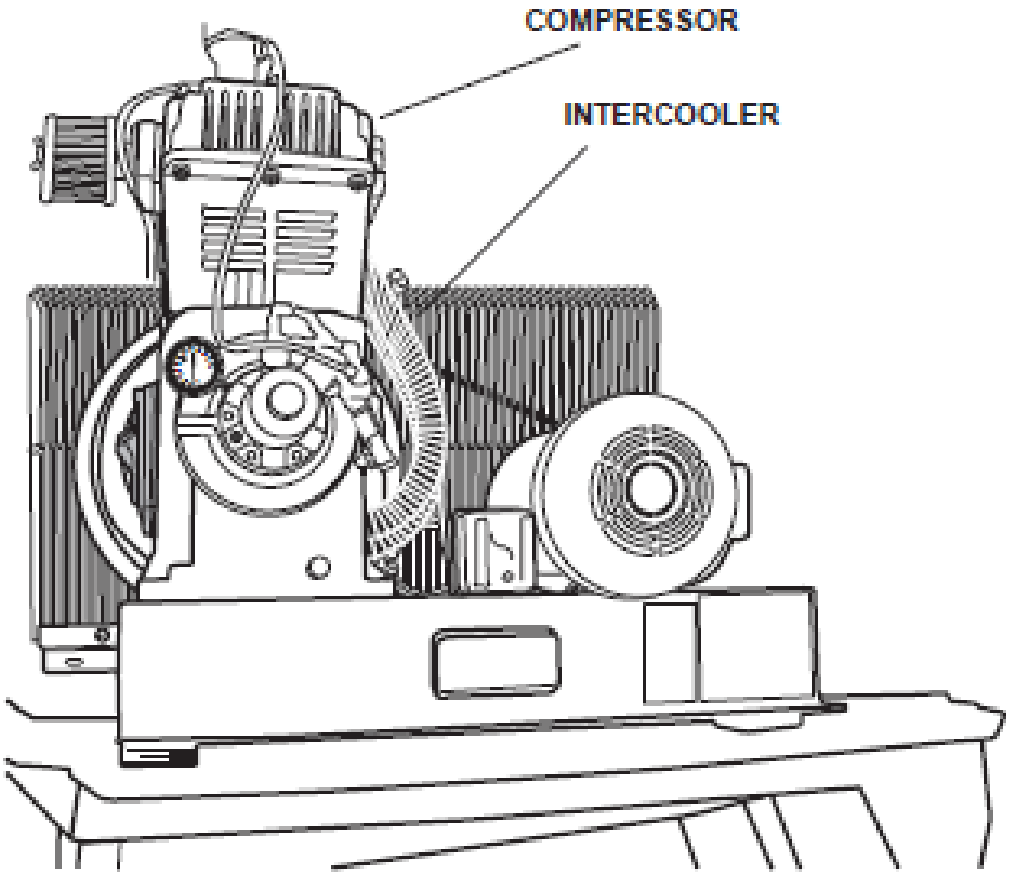

Figure 551-88L-2045_04
Clean the Intercoler and Compressor

(2) Inspect the air intake filter.

(a) Clean with compressed air.

(b) Replace if necessary.

(3) Remove the dipstick and inspect the oil for contamination, change the oil if any of the following are found; (refer to Figure 551-88L-2045_05).

(a) Milky appearance.

(b) Metal flakes.

(4) Grease the grease fittings.

(a) Wipe away any dirt on the fittings before greasing.

(b) Apply two pumps of ball and roller bearing grease to the grease fittings, (refer to Figure 551-88L-2045_05).

(c) Wipe away any excess grease from the fittings after greasing.

d. Check the automatic drains for:

(1) Leaks.

(2) Loose connections.

(3) Damage.

(4) Proper operation.

5. Perform monthly PMS.

a. Check for proper V-belt tension.

(1) Check V-belt tension and adjust as necessary, (refer to Figure 551-88L-2045_06).

(a) Remove belt guard.

(b) Proper tension is achieved when the belt may be deflected 1/2 inch at its midpoint when applying approximately 4 to 5 pounds of force to the belt.

(c) A new belt should be tensioned to approximately 3/8 inch deflection.

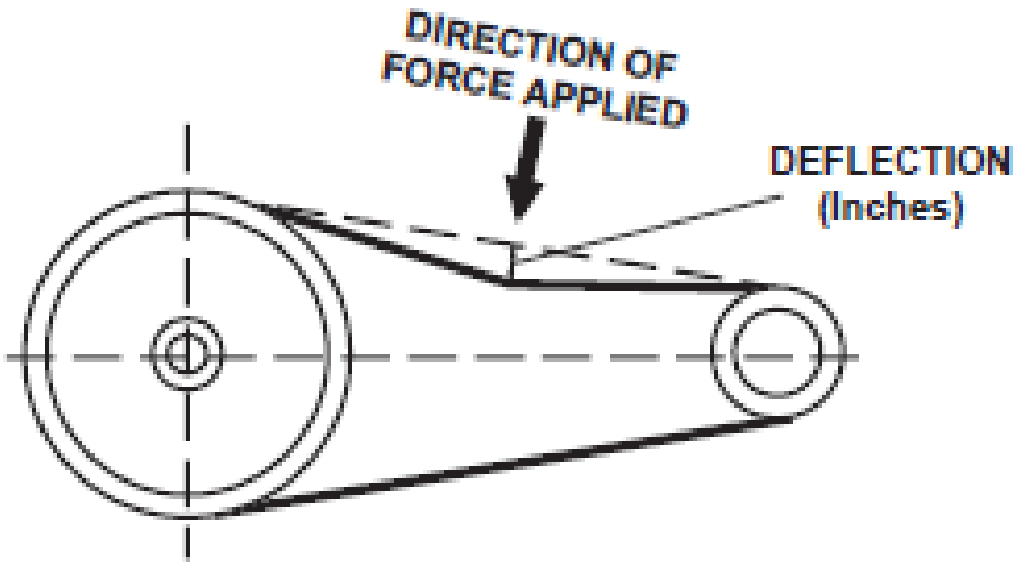

Figure 551-88L-2045_06
V-Belt Deflection

(d) If a belt requires replacing, DO NOT replace just one belt, all the belts MUST be replaced with a matched set.

(2) Adjust V-belt tension.

(a) Remove the belt guard.

(b) Loosen the four bolts and nuts that secure the motor to the foundation.

(c) Slide the motor away from the compressor until the proper belt tension is achieved.

(d) Tighten the four bolts and nuts that secure the motor to the foundation.

(e) Replace belt guard.

b. Check pulleys for:

(1) Tightness of pulley and pulley clamp bolts, (refer to Figure 551-88L-2045_07).

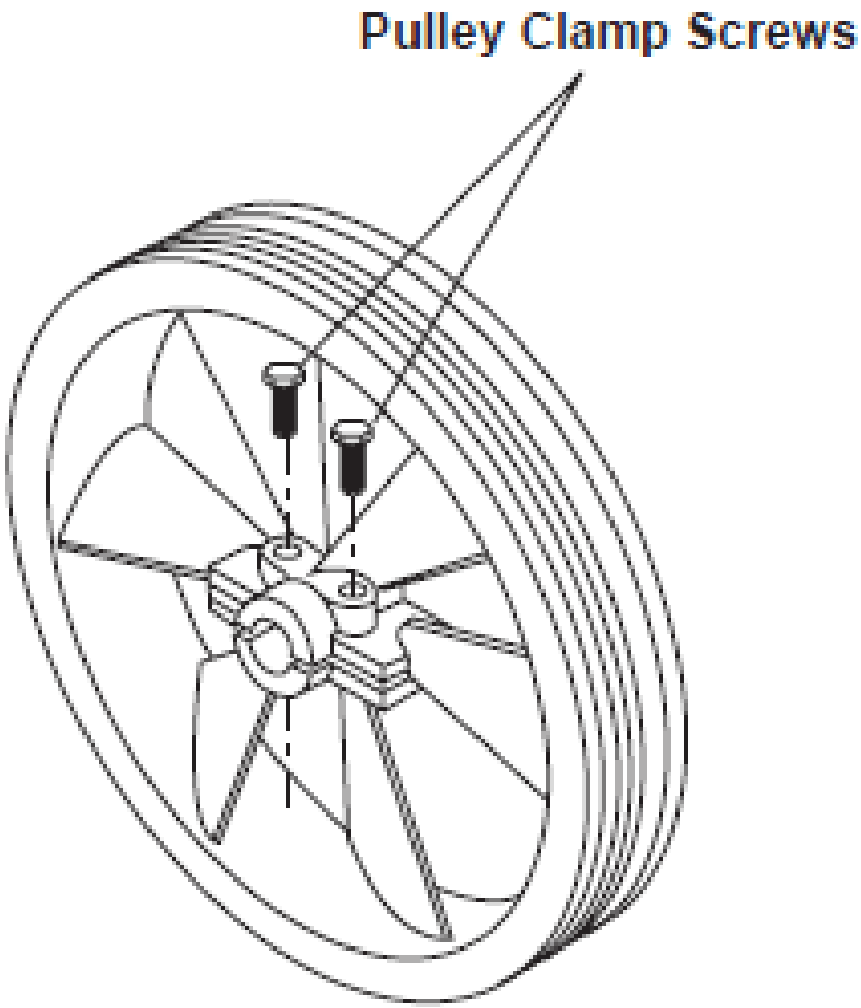

Figure 551-88L-2045_07
Pulley Clamp Screws

(2) Proper pulley/sheave alignment, (refer to Figure 551-88L-2045_08).

(a) Place a suitable straightedge (refer to Figure 551-88L-2045_08 #1) across the compressor sheave (refer to Figure 551-88L-2045_08 #2) and the motor pulley (refer to Figure 551-88L-2045_08 #3). The suitable straightedge should rest firmly across both flanges of the outermost sheave or pulley.

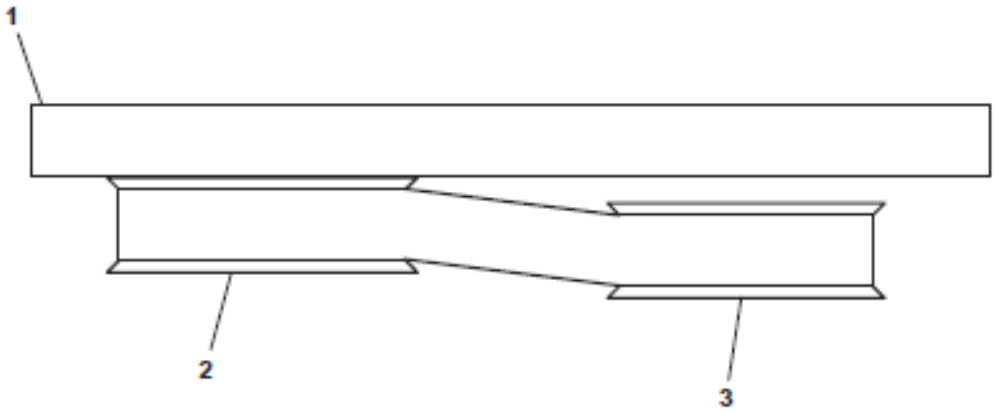

Figure 551-88L-2045_08
Straightedge on pulleys

(b) With the suitable straightedge in place, check for both parallel and angular misalignment. Maximum permissible parallel misalignment is 1/16 inch (1.6 mm). Maximum permissible angular misalignment is 1/2 degree, (refer to Figure 551-88L-2045_09).

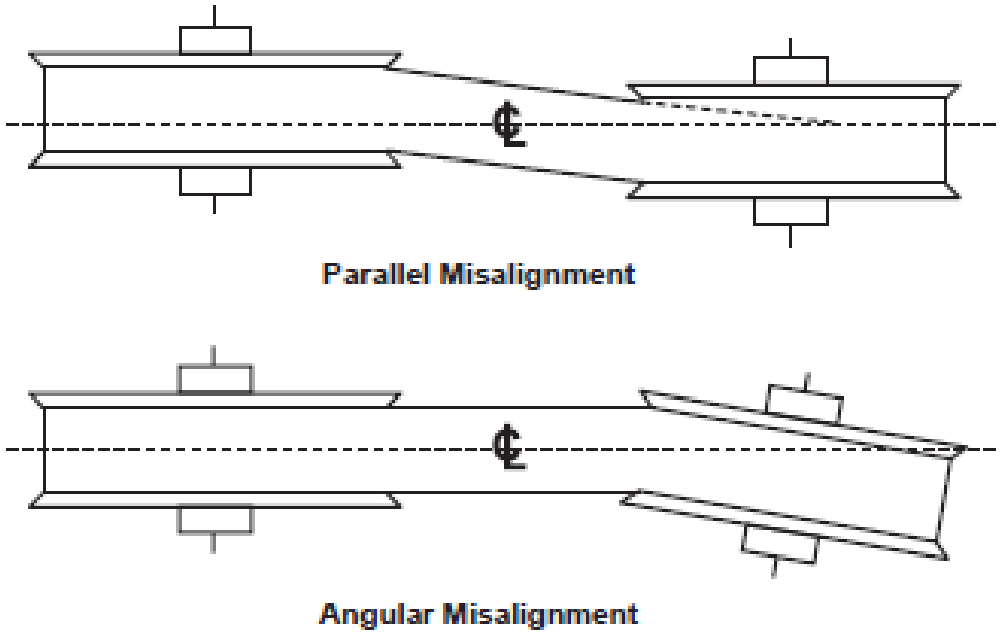

Figure 551-88L-2045_09
Sheave Alignment

(c) To correct parallel misalignment:

_1_ Loosen the sheave clamp bolts (refer to Figure 551-88L-2045_10 #1).

_2_ Slide the sheave in or out on the compressor shaft until the proper alignment is achieved.

_3_ Torque the sheave clamp bolts to 90 lb-ft (122 Nm).

_4_ Check the alignment. If the alignment is not within specifications, repeat steps 1) through 3).

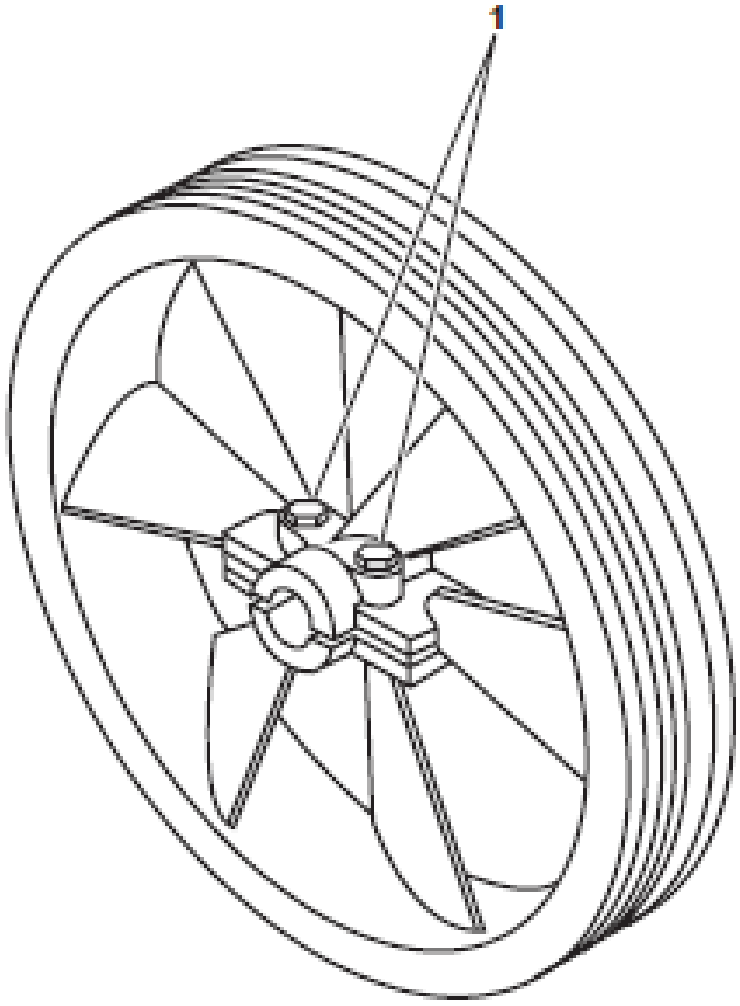

Figure 551-88L-2045_10
Sheave Clamp Bolts

(d) To correct angular misalignment.

_1_ Loosen the four bolts and nuts holding the motor to the foundation.

_2_ Twist the motor on the foundation until the angular alignment is met.

_3_ Tighten the four bolts and nuts holding the motor to the foundation.

6. Perform quarterly or periodic (500 operating hours) PMS.

a. Service the air compressor.

(1) Change the oil and filter.

(2) Torque the pulley clamp screws to 90 lb/ft.

b. Test and adjust separator and Prefilter Solenoid Valves (LCU).

(1) Test solenoid valves.

(a) Secure power on air filter automatic valve controller (Item 1 Figure 551-88L-2045_11) by pushing switch (Item 2 Figure 551-88L-2045_11).

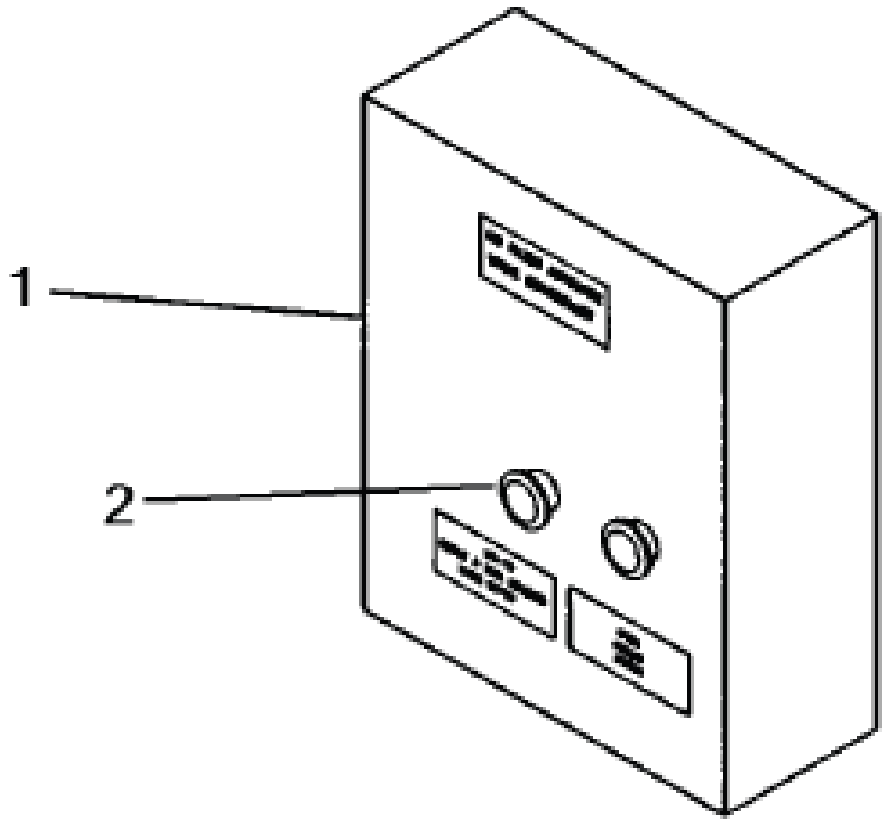

Figure 551-88L-2045_11
Air Filter Automatic Valve Controller

(b) Set ON TIME control knob (Item 4 Figure 551-88L-2045_12) on solenoid valves (Item 1 and 2 Figure 551-88L-2045_12) to 15 seconds.

(c) Set OFF TIME control knob (Item 3 Figure 551-88L-2045_12) on solenoid valves (Item 1 and 2 Figure 551-88L-2045_12) to TEST position.

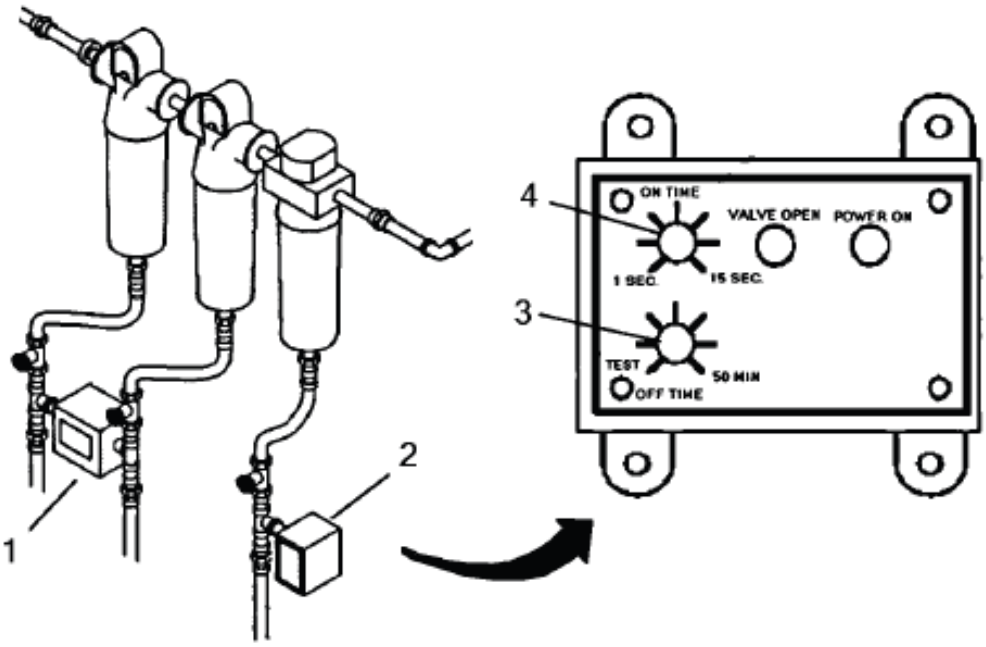

Figure 551-88L-2045_12
Dual and Single Solenoid Valves

(d) Restore power on air filter automatic valve controller (Item 1 Figure 551-88L-2045_11) by pulling out switch (Item 2 Figure 551-88L-2045_11).

(e) Verify solenoid valve opens for 15 seconds and closes for 5 seconds.

(f) Adjust solenoid valve.

(2) Adjust solenoid valves.

(a) Secure power on air filter automatic valve controller (Item 1 Figure 551-88L-2045_11) by pushing switch (Item 2 Figure 551-88L-2045_11).

(b) Set ON TIME control knob (Item 4 Figure 551-88L-2045_12) on solenoid valve (Item 1 and 2 Figure 551-88L-2045_12) to 5 seconds or desired length of time for solenoid valve to open (measured between 1-15 seconds).

(c) Set OFF TIME control knob (Item 3 Figure 551-88L-2045_12) on solenoid valve (Item 1 and 2 Figure 551-88L-2045_12) to 15 minutes or desired length of time for solenoid valve to remain closed (measured between 1-50 minutes).

(d) Restore power on air filter automatic valve controller (Item 1 Figure 551-88L-2045_11) by pulling out switch (Item 2 Figure 551-88L-2045_11).

7. Perform annual PMS.

a. Inspect pressure switches.

(1) Inspect the diaphragm.

(a) Listen for leakage or signs of deterioration.

(b) Replace the pressure switch when a leaking or deteriorated diaphragm is detected.

(2) Inspect the contact points.

(a) Check for signs of pitting or burning.

(b) Replace the pressure switch when burned or pitted contact points are detected.

b. Check all foundation and mounting bolts for tightness.

(1) Check bolts that mount the foundation to the vessel.

(2) Check the bolts that mount the compressor to the foundation.

(3) Check the bolts that mount the motor to the foundation.

(4) Check belt guard bolts.

(Asterisks indicates a leader performance step.)

Evaluation Preparation: None

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Performed maintenance before each compressor start.			
a. Checked air compressor oil level.			
b. Checked the air compressor.			
c. Drained the air receivers.			
d. Drained the water separators.			
2. Checked air system during operation.			
a. Checked the air compressors.			
b. Checked the starting air receiver pressure.			
c. Checked the ships service air receiver pressure.			
d. Checked the piping system.			
3. Checked air system after compressors have been shut down.			
a. Checked the air compressors.			
b. Checked the piping system.			
4. Performed weekly PMS.			
a. Manually operated the pressure relief valves.			
b. Checked the air dryers.			
c. Serviced the air compressors.			
d. Checked the automatic drains.			
5. Performed monthly PMS.			
a. Checked V-belt tension.			
b. Checked pulleys.			
6. Performed quarterly PMS.			
a. Serviced the air compressors.			
b. Tested separator and prefilter solenoid valves.			
c. Adjusted separator solenoid valves.			
7. Performed annual PMS.			
a. Inspected pressure switches.			
b. Checked all foundation and mounting bolts for tightness.			

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	TM 55-1905-223-10	OPERATORS MANUAL FOR LANDING CRAFT, UTILITY (LCU 2000 CLASS) (NSN 1905-01-154-1191) (REPRINTED W/BASIC INCL C1-9)	No	No
	TM 55-1905-223-24-8	UNIT, INTERMEDIATE DIRECT SUPPORT AND INTERMEDIATE GENERAL SUPPORT MAINTENANCE INSTRUCTIONS FOR AIR COMPRESSOR FOR LANDING CRAFT UTILITY (LCU) (NSN 1905-01-154-1191) (REPRINTED W/BASIC INCL C1-2) (THIS IT	No	No
	TM 55-1915-200-10	OPERATORS MANUAL FOR LOGISTIC SUPPORT VESSEL (LSV) (NSN 1915-01-153-8801) (REPRINTED W/BASIC INCL C1-6)	No	No
	TM 55-1915-209-24&P	UNIT, INTERMEDIATE DIRECT SUPPORT AND INTERMEDIATE GENERAL SUPPORT MAINTENANCE (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST) FOR COMPRESSED AIR SYSTEM MODEL NUMBER QR 25 350 P/N 52201-101 (REPRINTED W/B	No	No
	TM 55-1915-254-10-1	OPERATOR'S MANUAL FOR LOGISTICS SUPPORT VESSEL (LSV-7 & -8)	No	No
	TM 55-1915-254-10-2	OPERATOR'S MANUAL FOR LOGISTICS SUPPORT VESSEL (LSV-7 & -8)	No	No
	TM 55-1915-279-14&P	OPERATOR'S, UNIT, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL	No	No
	TM 55-1925-204-12	OPERATORS AND ORGANIZATIONAL MAINTENANCE MANUAL FOR TUG, HARBOR, DIESEL, STEEL, 1,200 HP, 100 FOOT DESIGN 3006, FLIGHT ONE (NSN 1925-00-375-3003) (REPRINTED W/BASIC INCL C1-5)	No	No
	TM 55-1925-273-10-1	OPERATOR'S MANUAL FOR INLAND COASTAL LARGE TUG (LT)	No	No
	TM 55-1925-286-13&P	OPERATOR, UNIT AND DIRECT SUPPORT MAINTENANCE MANUAL INCLUDING REPAIR	No	No

Environment: None

Safety: In a training environment, leaders must perform a risk assessment in accordance with FM 5-19, Composite Risk Management. Leaders will complete a DA Form 7566 COMPOSITE RISK MANAGEMENT WORKSHEET during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, NBC Protection, FM 3-11.5, CBRN Decontamination.

Prerequisite Individual Tasks : None

Supporting Individual Tasks :

Task Number	Title	Proponent	Status
551-88L-3051	Troubleshoot an Air System	551 - Transportation (Individual)	Approved
551-88L-1029	Demonstrate Basic Knowledge of an Air System	551 - Transportation (Individual)	Analysis

Supported Individual Tasks :

Task Number	Title	Proponent	Status
551-88L-3051	Troubleshoot an Air System	551 - Transportation (Individual)	Approved
551-88L-1029	Demonstrate Basic Knowledge of an Air System	551 - Transportation (Individual)	Analysis

Supported Collective Tasks :

Task Number	Title	Proponent	Status
N/A	N/A	Not Selected	Obsolete